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also excellent discussions of work in the production of disease-resistant varieties of flax and wheat by H. L. BOLLEY, and of rice by CHARLES E. CHAMBLISS.

The volume is illustrated with about seventy cuts and diagrams, most of the former being good half-tone engravings. The book is printed on rather cheap paper, but is well bound. It is marred by an undue number of typographical errors, owing to the unfortunate fact that the various papers were not submitted to their authors for correction. The volume closes with a directory of the members of the association, now numbering something over 1200, followed by subject and author indexes to the articles contained in the volume. No biological library can afford to be without these annual volumes, and every one interested in any subject related to heredity or breeding should not fail to become a member of the organization.—GEO. H. SHULL.

Floral biology

Under the general direction of Dr. TOULOUSE, Doin & Fils, Paris, have undertaken the publication of an *Encyclopédie scientifique*. It is divided into 40 sections, each in charge of a special director, and the completed work will comprise about 1000 volumes, each one of which will be a scientific monograph. The classification is exceedingly interesting, botany being represented by three of the 40 sections as follows: 15, *Physiologie et pathologie végétales*; 22, *Botanique*; 35, *Botanique appliquée et agriculture*; not to mention other sections entitled *Biologie*, *Physiologie*, *Pathologie*, etc., which inferentially contain no botany. The section of plant physiology and pathology is under the special direction of L. MANGIN, and is to include 13 monographs, the first one of which to appear is on "Floral biology," by PÉCHOUTRE.³

The boundaries of the subject are vague, but after a historical introduction the author presents his material in two parts: (1) Sex and sexual elements, and (2) Pollination and floral structures. The topics of the second part are obvious, and the usual information concerning cleistogamy, dichogamy, etc., is presented as fully as 175 pages will permit, and presumably in a form suited to the prospective audience. Just what may be treated in such a volume under the head of "sex and sexual elements," however, is not so self-evident. In this case the titles of the six chapters are in substance as follows: the separation of sexes in flowering plants; the influence of external agents on the determination of sex in dioecious plants; the phylogeny of the separation of sexes; the transformation of "hermaphrodite" plants into dioecious plants, including "slow variation or mutation;" the sexual elements of "phanerogams," including protection of pollen, formation of gametes, the development of the pollen tube, and fertilization; the dissociation of the vegetative and sexual activities of pollen.

Taking the book as a whole, it is conspicuous for its lack of perspective, perhaps it would be better to say its curious perspective; for its material of very

³ PÉCHOUTRE, F., *Biologie florale*. 12 mo. pp. 369. figs. 82. Paris: Octave Doin & Fils. 1909. 5/r.

unequal values, assorted in such a way as to indicate information that comes from reading rather than knowledge that comes from investigation; and for its evidence of a very limited acquaintance with the modern literature, including as it does some of the best literature, dealing with the subjects presented. The desire to interpret science to the reading public is a worthy motive, and it ought to appeal more strongly to men of science than it does; but the interpretation must represent current science, or it will deceive rather than inform.—J. M. C.

MINOR NOTICES

Das Pflanzenreich.⁴—Part 38 of this work consists of a monographic treatment of the Cyperaceae-Caricoideae by the distinguished caricologist Professor GEORG KÜKENTHAL. The author follows the usual sequence of this excellent series of monographs in the general consideration of the group. Four genera are included, namely, *Schoenoxiphium* (6 species), *Cobresia* (29 species), *Uncinia* (24 species), and *Carex* (793 species). The total number of species representing the four genera, as here treated, includes only about a dozen which are characterized as new, and of the new species not one is recorded from America. Several new American varieties, however, are described. The nomenclatorial changes are relatively few. The chief interest of the publication centers on the genus *Carex*, which is divided into four subgenera and fourteen sections; the divisions are based primarily on the characters of the inflorescence. The keys preceding the species of each section are concise and well contrasted, the descriptions are carefully drawn, the literature and exsiccatae are freely cited, and the illustrations are numerous and well selected. On the whole the present monograph should materially aid toward a better understanding of this difficult but interesting genus.

Part 39 contains an elaboration of the Phytolaccaceae by DR. HANS WALTER. The author recognizes for this family 24 genera and 114 species, of which 32 are new to science. In addition to the general index there is a list of the collectors mentioned and numbers cited in the body of the work, which facilitates greatly the organizing of herbarium material in accordance with the text.—J. M. GREENMAN.

Chronology of the flora of Italy.⁵—The present volume is an analysis of the flora of Italy with particular reference to its historical development. The main body of the work is essentially a catalogue of the species, including those indigenous, introduced, and naturalized, also those in cultivation. The sequence of the genera is in accordance with ENGLER and PRANTL'S *Natürlichen Pflanzenfamilien*. About 4100 species, many varieties, and hybrids are listed, and under the species reference

⁴ ENGLER, A., *Das Pflanzenreich*. Heft 38 (IV. 20). Cyperaceae-Caricoideae von GEORG KÜKENTHAL, pp. 824. figs. 128 (981). M 41.20. Heft 39 (IV. 83). Phytolaccaceae von HANS WALTER, pp. 154. figs. 42 (286). M 7.80. Leipzig: Wilhelm Engelmann. 1909.

⁵ SACCARDO, P. A., *Chronologia della flora Italiana*. Royal 8vo. pp. xxxvii + 390. Padova: Tipografia del Seminario. 1909. L.15 (\$2.90).